

CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) An array composition comprising:
  - a) a substrate with a surface ~~comprising discrete sites~~; and
  - b) a population of microspheres comprising at least a first and a second microsphere,
 

wherein said first microsphere comprises a plurality of different target ~~analytes~~ nucleic acid molecules comprising sequences from a first individual, and wherein said first microsphere further comprises a first identifier binding ligand ~~that~~ which identifies said plurality of different target nucleic acid molecules from said first individual, [[:]]

wherein said second microsphere comprises a plurality of different target ~~analytes~~ nucleic acid molecules comprising sequences from a second individual, and wherein said second microsphere further comprises a second, different identifier binding ligand ~~that~~ which identifies said plurality of different target nucleic acid molecules from said second individual; [[:]] ~~wherein said plurality of different target nucleic acid molecules are covalently attached to each of said microspheres;~~

and wherein said microspheres are ~~randomly~~ distributed on said surface.
2. (cancelled)
3. (cancelled)
4. (currently amended) The array composition according to claim 1, wherein said identifier binding ligands are nucleic acid molecules ~~acids~~.
5. (cancelled)
6. (currently amended) The array composition according to claim 42, [11] wherein said target nucleic acid molecules comprise genomic DNA.
7. (cancelled)

8. (original) The array composition according to claim 1 wherein said substrate is a fiber optic substrate.

9. (original) The array composition according to claim 1 wherein said substrate is plastic.

10. (currently amended) The array composition according to claim 41, [[1]] wherein said discrete sites are wells.

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (currently amended) ~~An array composition comprising a substrate comprising discrete sites wherein each of said discrete sites comprises a microsphere having a different identifier binding ligand and a plurality of different covalently attached target nucleic acid molecules comprising sequences from different individuals, wherein said different identifier binding ligands each identify said plurality of different target nucleic acid molecules from different individuals; The array composition according to claim 41, wherein said surface comprises said discrete sites are at a density of about 10,000 to 1,000,000,000 discrete sites per cm<sup>2</sup>.~~

15. (cancelled)

16. (currently amended) The array composition according to claim 1, 14; wherein said plurality of different target analytes nucleic acid molecules are covalently attached to said microspheres; wherein said microspheres are distributed in said discrete sites.

17. (cancelled)

18. (cancelled)

19. (cancelled)

20. (cancelled)

21. (cancelled)

22. (cancelled)

23. (cancelled)

24. (cancelled)

25. (currently amended) The array composition according to claim 41, ~~or claim 14~~, wherein said surface comprises ~~discrete sites are at a density of~~ about 100,000 to 10,000,000 discrete sites per  $\text{cm}^2$ .

26. (currently amended) The array composition according to claim 41, ~~or claim 14~~, wherein said surface comprises ~~discrete sites are at a density of~~ about 10,000,000 to 1,000,000,000 discrete sites per  $\text{cm}^2$ .

27. (currently amended) The array composition according to claim 41, ~~or claim 14~~, wherein said surface comprises ~~discrete sites are at a density of~~ about 10,000 to 100,000 discrete sites per  $\text{cm}^2$ .

28. (currently amended) A composition comprising a population of microspheres, said population comprising at least a first and a second microsphere,

wherein said first microsphere comprises a plurality of different target analytes ~~nucleic acid molecules comprising sequences~~ from a first individual, wherein said first microsphere further comprises a first identifier binding ligand that ~~which~~ identifies said plurality of different target nucleic acid molecules from said first individual, and

wherein said second microsphere comprises a plurality of different target analytes ~~nucleic acid molecules comprising sequences~~ from a second individual, wherein said second microsphere further comprises a second, different identifier binding ligand that ~~which~~ identifies said plurality of different target nucleic acid molecules from said second individual, ~~wherein said~~

plurality of different target nucleic acid molecules are covalently attached to each of said microspheres.

29. (canceled)

30. (canceled)

31. (currently amended) The composition according to claim 28, wherein said identifier binding ligands are nucleic acid molecules ~~ligand is a nucleic acid~~.

32. (cancelled)

33. (currently amended) The composition according to claim ~~45~~, 28, wherein said nucleic acid molecules comprise genomic DNA.

34. (cancelled)

35. (cancelled)

36. (cancelled)

37. (currently amended) The array composition according to claim 1, ~~14 or 28~~, wherein said plurality of different target analytes comprises ~~nucleic acid molecules on each of said microspheres is composed of~~ about 2 to 100,000 different target analytes ~~nucleic acid molecules~~.

38. (cancelled)

39. (new) The array composition according to claim 1, wherein said plurality of different target analytes comprises about 10 to 10,000 different target analytes.

40. (new) The array composition according to claim 1, wherein said plurality of different target analytes comprises about 100 to 1000 different target analytes.

41. (new) The array composition according to claim 1, wherein said microspheres are distributed at discrete sites on said surface.

42. (new) The array composition according to claim 1, wherein said target analytes are nucleic acid molecules.

43. (new) The array composition according to claim 42, wherein said nucleic acid molecules are single-stranded.

44. (new) The array composition according to claim 41, wherein said microspheres are randomly distributed.

45. (new) The composition according to claim 28, wherein said target analytes are nucleic acid molecules.

46. (new) The composition according to claim 45, wherein said nucleic acid molecules are single-stranded.

47. (new) The composition according to claim 28, wherein said plurality of different target analytes are covalently attached to said microspheres.

48. (new) The composition according to claim 28, wherein said plurality of different target analytes comprises about 2 to 100,000 different target analytes.

49. (new) The composition according to claim 28, wherein said plurality of different target analytes comprises about 10 to 10,000 different target analytes.

50. (new) The composition according to claim 28, wherein said plurality of different target analytes comprises about 100 to 1000 different target analytes.